The Old Gives Way to the New — W9SO *(above)* and W9HHX

Marconi Plus Six . . . Radio at MSOE

The history of wireless and radio at the Milwaukee School of Engineering goes back to 1903, the year of the school's founding, only six years after Marconi took out patents on his system of wireless telegraphy.

In this first year of the School's existence, students built crystal sets which received messages from virtually every part of the country. The strength of these receivers was augmented by a large Marconi wireless station which was installed near the School with its antenna linking two tall chimneys of the Pabst Brewery.

By 1911, when the Milwaukee Merchants and Manufacturers Association was celebrating its twenty-fifth anniversary, the students of MSOE scored a triumph by controlling a 25-foot model zeppelin as it flew around the city auditorium through a remotely operated wireless device.

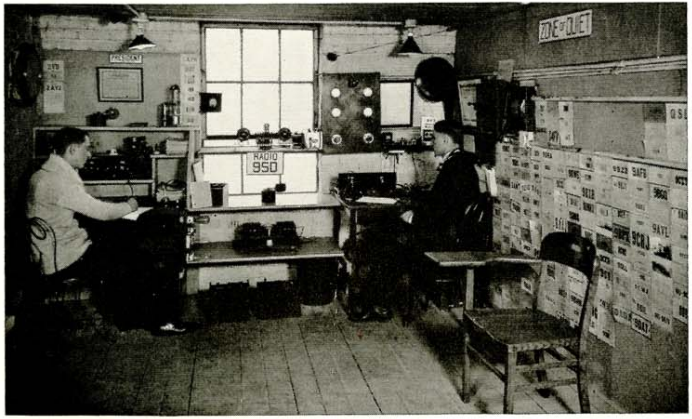
Interest and training in radio developed to such an extent, in the next few years, that in 1918 the School owned and operated a complete Marconi spark sending and receiving station. Student interest and ability was such that they built and operated an amateur station the same year.

A pioneer in Wisconsin radio, the School put Milwaukee's first Station WIAO on the air for its initial broadcast on September 22, 1922. Transmission was made on a wave length of 360 meters with 100 watts power. In the following years, newer and more powerful equipment was installed and on July 7, 1925 the call letters were changed to WSOE. It was during this period of expansion that the School purchased the powerful station at Zion City, Illinois, and put a 165 foot antenna into service on the top of the building at East Wells and Jackson streets.

The new station gave its support to civic projects and put broadcasts of a number of special events on the air. Many noted national figures took part in the programs, gaining WSOE national recognition. Among the prominent men to face WSOE microphones during that era were Col. Charles Lindberg, Lieut. Maitland, Vice-President Dawes, and President Hoover.

Broadcast programming was done to satisfy varied tastes. Classical music was aired on Tuesday evenings; popular music on Monday, popular ballad and old-fashioned music Thursday, and diversified music on Friday evenings completed the station's musical offering. The technically minded were pleased with Wednesday evening talks by the School faculty members and other prominent engineers. Saturday was the day of week-end reviews and Sunday audiences heard services broadcast from Milwaukee churches—both in the afternoon and the evening.

Other outstanding features were added to the station's program and, in cooperation with the *Wisconsin News*, a new $50,000 organ was installed on which recitals were given by Evelyn Kerr.



Norbert Richard '28 and William Gainer '32 operating W9SO while students at MSOE.

The Wisconsin News, a Milwaukee daily newspaper, began programming, on a part-time basis, July 30, 1924 and full-time a year later. In June 1927, the station's power was boosted to 500 watts and its frequency was set at 1110 kilocycles. The call letters were changed to WISN in January 1928. The station was operated by the School in conjunction with the newspaper company and in November of that year the new Federal Radio Commission assigned WISN a frequency of 1120 kilocycles with 250 watts power. It also ordered the station to share time with WHAD, Marquette University's transmitter. WISN was to operate six-sevenths of the time, and WHAD one-seventh.

The station remained under the technical supervision of the School and radio students had ample opportunity to study the intricacies of the modern broadcasting station and to examine the design, construction, and operation of transmitting equipment. WISN joined the Columbia network in 1929 and carried chain broadcasts as well as those originating in its own studios.

The change in call letters was the result of Federal laws which forbade schools to commercialize through radio. MSOE retained permission to re-enter the radio broadcasting field, and to use the station with the call letters, WSOE. In the meantime, in 1924, the student members of the School's Radio Club had developed and obtained a license for an amateur station, W9SO.

The station, built by the club, served as the focus for its activities. The group, organized by six licensed amateur operators attending MSOE, grew rapidly and W9SO soon affiliated with the American Radio Relay League, a national organization of amateur stations. Many of its forty members owned their own individual "ham" stations.

Because of its previous wide experience and range, W9SO was chosen as the key station of the Western section of the College Radio Union. The area, organized by William P. Gainer, Chief Operator of W9SO, included most of the United States west of the Allegheny mountains, and Alaska, the Hawaiian Islands, and the Philippines.

In its seven years of existence, the club made a history of its own. It communicated with Admiral Byrd's ship while it was on its conquest of the South Pole, and reported first information on the Cuban hurricane disaster which wiped out all other communication with the American mainland in 1926.

Although the School had included instruction in the science of wireless communication in its courses for many years, it was not until 1925 that MSOE inaugurated its radio course. This course gave the student a fundamental knowledge of electrical circuits and the theory of radio reception, and prepared him for practical work as an engineer in designing, installing, constructing, and inspecting and testing radio equipment.

Prior to 1926, radio servicemen were hired on their own recommendation. Members of the Wisconsin Radio Trade Association found that many of these self-styled experts had little fundamental radio knowledge and often did more harm than good. Thus, in that year, under the leadership of Michael Ert, the Association adopted the policy of examining, grading, and registering radio servicemen.

Recognizing the service of the School to the radio world in supplying trained experts for the advancement of industry,

W9HHX Guest Night finds George Halper (W9SUF), a guest, at the key. *To his right* are Dale Egide, EE V; and Emil Rossdeutscher, EE VII. *Standing* behind the operator are Elton Stolberg (W9IWT), Eltn V; and *(with earphones)* Milo Beuthien (W9HCZ), Eltn III. Others standing, *left to right*, are: Clarence Burke (W9KEU) another guest; Don Guerard (W9NEM), Eltn IV; James Dorsey, MSOE Faculty member; and John Czaja (W9FSH), Eltn III.

the Association issued Radio Servicemen's Cards, Classes "C" and "B", to all students satisfactorily completing the course and complying with the qualifications required by the group.

When William Gainer finished school in 1932, he took the call, W9SO, with him and still operates a ham station on that license. Edward J. Stachura was in MSOE at that time and took out license W9JUE around which the Radio Club re-formed. The station was located on the third floor of the Broadway Building in the corner of what is now the Drafting department. The antenna ran from a window of that room to the roof of the Center Building.

As radio advanced, so also did the curriculum at the School. Courses were added in speech amplification and radio broadcasting. While the basic radio principles and servicing were retained, with the advent of Frequency Modulation and Television, subjects were added to the course to acquaint the students with these advances.

Today's Radio and Television Technician curriculum gives the student a sound base of principles of Electronics and Radio and, in addition to servicing training includes such subjects as: AM Transmitters and FCC Regulations, Control Room and Studio Procedures, Ultra-High Frequency Techniques, FM and Television Receivers, and FM and Television Transmitters. And after successfully completing these studies, the student may go on into the College of Electrical Engineering at MSOE and earn his Bachelor of Science degree in Electrical Engineering with a major in Electronics.

But the students today, as the students of the past, want more than classroom and laboratory work. Thus, on February 25, 1949 the MSOE Amateur Radio Club was re-activated with 84 students and instructors attending the first meeting. Officers were elected and a meeting was set for the following week. At that time committees were appointed and the officers and executive board were instructed to draw up a constitution and by-laws. On April 13, these were approved and membership in the American Radio Relay League was investigated.

It was at this meeting that Reid Burrows, Instructor in Radio and Television, was appointed trustee for the club's station, and on May 19 the Federal Communications Commission issued the club its license and the call W9HHX. It was not until June 4, however, that the station was "fired up" and went on the air for the first time. The initial contact was made on the 40 meter band with W9FLM at Scott Field Airforce Base in Illinois. Other stations the group worked the first day of operation ranged from New Jersey to California. These contacts were made on CW using code.

The fifteenth of the following month, Jack Doyle, Central Division Director of the ARRL, presented the club with its ARRL Charter. The Station remained exclusively on CW until October 22 at which time the transmitter was modulated for voice and went into operation on the 75 meter phone band.

Today, W9HHX is housed in its own "ham shack" on the MSOE grounds. The transmitter is a 1000 watt TEMCO (the legal limit for amateurs) and the antenna system, when complete, will include a 10 meter three element beam antenna and a 20 meter three element beam antenna with beam rotater on a mast atop the Center Building.

A far cry from the "rigs" operated by MSOE's early students is today's sleek, powerful transmitter, but the amateur spirit which animated the young men of W9HHX is the same as that which kept their predecessors "pounding brass" in years past.

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Marconi Plus Six . . .

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WISN moved in April, 1932 to the *Milwaukee Sentinel* building where its studios and offices are located today. The Hearst organization, of which the *Sentinel* is a part, bought WHAD in 1934 and from that point on, WISN was operating on a full-time basis. The station installed a new transmitter and a vertical radiator at the nearby Public Service building.